

HYDROELECTRIC PLANT TECHNICIAN III  
CALIFORNIA STATE PERSONNEL BOARD  
SPECIFICATION

Schematic Code: --  
Class Code: --  
Established: --  
Revised: --  
Title Changed: --

HYDROELECTRIC PLANT TECHNICIAN III

DEFINITION

This is the advanced journey/lead worker level class in the Hydroelectric Plant Technician series. An incumbent works under general direction to lead and perform the most complex preventive and corrective maintenance tasks associated with protection schemes, monitoring and control equipment, communications and security systems, metering, sensors, computerized and other equipment used in State Water Project (SWP) generating/pumping plants, switchyards, and water conveyance facilities; performs shop or field work as needed to install, calibrate, maintain, operate, troubleshoot, repair and test electrical, electronic, and electromechanical equipment and devices; and does other related work as required.

TYPICAL TASKS

Assigns tasks to subordinate staff based on consideration of their skills and experience to ensure that work is completed efficiently and correctly; conducts meetings with subordinate employees to communicate information that is necessary for job performance; instructs subordinates in the use, operation and functions of test equipment, testing methods and procedures, and computer analyzing equipment; assists in the training and development of entry-level technicians; performs the most difficult and complex preventive and corrective maintenance tasks associated with protection schemes, monitoring and control equipment, communications and security systems, metering, sensors, computerized and other equipment used in State Water Project (SWP) generating/pumping plants, switchyards, and water conveyance facilities; performs the more difficult repairs; leads and instructs subordinates in repairing the circuitry, operation and maintenance of all types of solid state analog and digital control equipment; conducts pre-job hazard identification, assessment and control; operates and reads test instruments; records and summarizes test data; performs specialized testing such as Doble Test, Hi-Pot Testing, and Corona Probe; performs service interruption investigations after equipment failures; maintains SCADA applications on networks, including plant operator interfaces, programmable logic controllers, and protocol test sets; arranges for safe clearances, including directing necessary preparation for test, assuring availability of test instruments and procedures, and submitting work clearance application (WCA); verifies compliance with lockout/tag-out procedures by visually inspecting equipment and communicating with crews; verifies and validates modifications of control and protective circuit modifications on requests

based on application of operating knowledge; assures that adequate spare parts, materials, tools and testing equipment are available to efficiently perform the functions of the unit; initiates and receives trouble calls and job requests; investigates SIR's, determines priorities and plans work; directs, coordinates and monitors the work performed by technicians in the Field Divisions, including maintenance of the Control System and associated sub-systems, remote hydrologic monitoring sites, LAN and WAN communications equipment, and the telephone system; monitor the work of subordinate staff to ensure that it meets quality, quantity and timeliness standards; collaborates with other sections, outside agencies and vendors to identify and correct problems with interconnected systems; attends project technical coordination meetings, annual inspections of POC, etc., and perform miscellaneous administrative duties as required, including reviewing plans and specifications for all new/replacement control system equipment and communication system equipment; assists engineers in establishing, maintaining and administering Protection System standardized testing for all SWP facilities while working cooperatively with the PAMO protection engineers; lays out, inspects, schedules and works with a crew in the performance of difficult technical work in connection with the operational and maintenance tests of electrical and mechanical equipment, relays and devices; develops procedures to implement preventive maintenance (PM) for control systems; participates in inspection matters and provide support to engineering for all local operation and maintenance functions pertaining to the electrical and mechanical functions of the Field Divisions; maintains and updates protective relaying and WECC required calibration schedules, ensuring that they are performed on time; assists engineers in planning equipment evaluation, development of control system operating sequences, preparation of installation procedures, labor and cost estimates for control system equipment replacement; reviews and comments on plans and specifications for new/replacement control/communication system equipment; suggests system design changes and originates Facilities Modification and Change Transmittals; researches, tests, analyzes and reports on the applicable use of new instrumentation; prepares weekly work plans; process weekly and monthly overtime reports, weekly activity reports and timelines, and employee A&D's' responds to trouble calls, including after hours and on weekends, as necessary.

#### MINIMUM QUALIFICATIONS

##### Either I

Three years of experience in the California state civil service performing the duties of a Hydroelectric Plant Technician II.

##### Or II

Four years of journey-level experience performing testing, calibration and maintenance of protections systems, monitoring and control equipment, communications and security systems, metering and sensors similar to those used in generating/pumping plants, switchyards, and water conveyance facilities; AND Completion of an approved two-year (60 semester or equivalent quarter units) technical curriculum in electrical, electronic, mechanical or computer-science technology at the community college level, or equivalent. [Additional electrical, electronic, mechanical, or computer-science work experience in an electrical utility

or equivalent industrial or military facility, may be substituted for the required education on the basis of one year of experience being equivalent to 15 semester units.]

#### KNOWLEDGE AND ABILITIES

Knowledge of: mathematics, algebra, trigonometry, and Boolean logic to solve electrical and electronic problems; equipment and procedures for testing, inspection, calibration, installation, troubleshooting, maintenance and repair of control systems, communication systems, network systems, and associated equipment; equipment and procedures for testing electrical, electromechanical and electronic devices associated with large generating and pumping plants and switchyards; test equipment and diagnostic devices, such as oscilloscopes, multi-meters, counters, and power system, logic, and network analyzers to determine, diagnose, and isolate problems or malfunctions in order to make necessary repairs; electronic, electro-mechanical and hydraulic equipment and procedures for testing and measuring flow, vibration, pressure, temperature, speed, level, and displacement; materials, equipment, and procedures for testing, maintenance and repair of electronic and electromechanical devices; electrical and electronic theory and its application to solve electrical and electronic system problems and to test, maintain and repair electrical and electronic equipment; equipment, procedures, safety and testing requirements for protection systems such as CT, PT, and electromechanical and micro-processor based protective relays; equipment, procedures, safety and testing practices for large-scale distributed supervisory control and data acquisition (SCADA) systems and distributed communication systems; equipment, procedures and testing practices for network and security systems; instrumentation for measuring flow, level, position, temperature, pressure, speed, and vibration; safety, security and reliability practices, including federal and state regulatory mandates as related to hydroelectric facilities and high-voltage equipment; safety procedures for working on high-voltage equipment, including lockout/tag-out procedures; support and maintenance practices for LANs and computer equipment and software for the SWP facilities; technical drawings (ex. one line diagrams, schematics, wiring diagrams, logic diagrams); color code standards for electrical wiring and components used in the manufacture, configuration, and repair of electrical equipment; hydroelectric facilities and high-voltage testing such as AC power-factor (Doble), DC insulation resistance (Meggar), and AC and DC high potential testing; hydroelectric plant construction, operation and maintenance; electrical and electronic theory as applied to power and pumping plant equipment; departmental personnel policies to ensure that actions are in compliance; basic principles and practices of personnel management to lead the work of others.

Ability to: test, inspect, calibrate, install, troubleshoot, maintain, and repair control systems, communication systems, network systems, and related equipment; test electrical, electromechanical, and electronic devices associated with large generating pumping plants and switchyards; determine, diagnose, and isolate problems or malfunctions in order to make necessary repairs; install test equipment and make all necessary connections; use mathematics, including algebra, trigonometry and Boolean logic to solve electrical and electronic problems; apply electrical and electronic theory and application to solve electrical and electronic problems and to test, maintain and repair electrical components, equipment and systems; read and interpret technical drawings, documentation and procedures for testing and repairs, and to interpret test results; use a personal computer for standard

office applications and specialized troubleshooting; train others to perform various aspects of work (ex. demonstrating proper procedures and techniques and communicating effectively); work in an environment that requires strict adherence to instructions, standards, and procedures; identify potential safety hazards; apply knowledge of existing systems and SWP facilities for the planning of equipment installations or modifications; analyze situations and make recommendations for improvements of performance or reliability of equipment, procedures and practices; wire components and equipment following wiring diagrams or schematics; prepare cost estimates and specifications; anticipate material and equipment needs; perform high-voltage insulation tests, performance and efficiency, vibration analysis and infrared scanning of hydroelectric power utility equipment; make accurate judgments regarding the amount of time a particular task or group of tasks will take to complete; project timelines, deadlines and completion dates; set, plan and coordinate various work activities in order to meet deadlines or goals; logically analyze a problem from different perspectives and generate potential solutions that are practical and effective; take apart a problem, assess interrelationships among the parts, and draw logical and feasible conclusions; prioritize and organize work activities of self and others to ensure that all work is completed correctly and in a timely manner; monitor and assess work performed to ensure compliance with Department policy and procedures; plan and direct the work of technicians performing various testing, inspecting, installation and maintenance activities at SWP facilities; work independently without close supervision to perform the duties of the job; comprehend policies, procedures, orders, rules, and other related written documents/materials to perform the duties of the job.

#### SPECIAL CHARACTERISTICS

Legally operate a motor vehicle; generate ideas or solutions to solve problems or handle non-routine situations; pay close attention to detail in order to ensure the completeness and accuracy of work performed by oneself and/or others; work as a team when necessary to complete the duties of the job in a cohesive and professional manner; work quickly and accurately in a high-pressure work environment; be reliable and dependable to properly perform job duties. maintain cooperative working relationships with co-worker; establish a course of action for self and others in order to achieve short-term and long-term goals.

#### SPECIAL REQUIREMENTS

The North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) Standard CIP-004 that is part of the Energy Policy Act of 2005 requires the completion of a thorough background investigation. Persons convicted of a felony may not be eligible to compete for, or be appointed to, positions in this class. Under the provisions of NERC CIP Standard CIP-004, any persons unsuccessful in the background investigation may be disqualified from having authorized cyber or authorized unescorted physical access to Critical Cyber Assets (CCA's).